Section 1. Registration Information

Source Identification

Facility Name:	Veeco Instruments, Inc.
Parent Company #1 Name:	
Parent Company #2 Name:	

Submission and Acceptance

Submission Type:	Re-submission
Subsequent RMP Submission Reason:	5-year update (40 CFR 68.190(b)(1))
Description:	
Receipt Date:	19-Jul-2022
Postmark Date:	19-Jul-2022
Next Due Date:	19-Jul-2027
Completeness Check Date:	19-Jul-2022
Complete RMP:	Yes
De-Registration / Closed Reason:	
De-Registration / Closed Reason Other Text:	
De-Registered / Closed Date:	
De-Registered / Closed Effective Date:	
Certification Received:	Yes

Facility Identification

EPA Facility Identifier:	1000 0021 3486
Other EPA Systems Facility ID:	NJD982539199
Facility Registry System ID:	

Dun and Bradstreet Numbers (DUNS)

Facility DUNS:	607518297
Parent Company #1 DUNS:	
Parent Company #2 DUNS:	

Facility Location Address

Street 1:	394 Elizabeth Ave.
Street 2:	
City:	Somerset
State:	NEW JERSEY
ZIP:	08873
ZIP4:	
County:	SOMERSET

Facility Latitude and Longitude

Latitude (decimal):	40.537574
Longitude (decimal):	-074.537171
Lat/Long Method:	GPS Code Measurements (Psuedo Range) Differential (DGPS)
Lat/Long Description:	Center of Facility
Horizontal Accuracy Measure:	5
Horizontal Reference Datum Name:	North American Datum of 1983

Source Map Scale Number:

Owner or Operator

Operator Name:	Veeco Instruments, Inc.
Operator Phone:	(516) 677-0200

Mailing Address

Operator Street 1:	1 TERMINAL DRIVE AND AMES
Operator Street 2:	
Operator City:	Plainview
Operator State:	NEW YORK
Operator ZIP:	11803
Operator ZIP4:	
Operator Foreign State or Province:	
Operator Foreign ZIP:	
Operator Foreign Country:	

Name and title of person or position responsible for Part 68 (RMP) Implementation

RMP Name of Person:	Michael Reid
RMP Title of Person or Position:	EHS Manager
RMP E-mail Address:	mreid@veeco.com

Emergency Contact

Emergency Contact Name:	Michael Reid
Emergency Contact Title:	EHS Manager
Emergency Contact Phone:	(732) 770-4354
Emergency Contact 24-Hour Phone:	(908) 297-2536
Emergency Contact Ext. or PIN:	
Emergency Contact E-mail Address:	mreid@veeco.com

Other Points of Contact

Facility or Parent Company E-mail Address:	jake.tracy@hrpassociates.com
Facility Public Contact Phone:	(518) 877-7101
Facility or Parent Company WWW Homepage Address:	1 Fairchild Square, Suite 110

Local Emergency Planning Committee

LEPC:	Somerset County LEPC

Full Time Equivalent Employees

Number of Full Time Employees (FTE) on Site:	253
FTE Claimed as CBI:	

Covered By

OSHA PSM :	Yes
EPCRA 302 :	Yes

CAA Title V:
Air Operating Permit ID:

OSHA Ranking

OSHA Star or Merit Ranking:

Last Safety Inspection

Last Safety Inspection (By an External Agency) Date:	20-Oct-2021
Last Safety Inspection Performed By an External Agency:	State environmental agency (NJDEP)

Predictive Filing

Did this RMP involve predictive filing?:

Preparer Information

Preparer Name:	Jake Tracy
Preparer Phone:	(518) 877-7101
Preparer Street 1:	1 Fairchild Square
Preparer Street 2:	Suite 110
Preparer City:	Clifton Park
Preparer State:	NEW YORK
Preparer ZIP:	12065
Preparer ZIP4:	
Preparer Foreign State:	
Preparer Foreign Country:	
Preparer Foreign ZIP:	

Confidential Business Information (CBI)

CBI Claimed:	
Substantiation Provided:	Yes
Unsanitized RMP Provided:	Yes

Reportable Accidents

Reportable Accidents: See Section 6. Accident History below to determine if there were any accidents reported for this RMP.

Process Chemicals

Process ID:	1000125727
Description:	MOCVD Tool R&D
Process Chemical ID:	1000157123
Program Level:	Program Level 3 process
Chemical Name:	Ammonia (anhydrous)
CAS Number:	7664-41-7
Quantity (lbs):	25070
CBI Claimed:	
Flammable/Toxic:	Toxic

Process NAICS

Process ID:	1000125727
Process NAICS ID:	1000127101
Program Level:	Program Level 3 process
NAICS Code:	54171
NAICS Description:	Research and Development in the Physical, Engineering, and Life Sciences

Section 2. Toxics: Worst Case

Toxic Worst ID: 1000101711

Percent Weight:	
Physical State:	Gas liquified by pressure
Model Used:	EPA's OCA Guidance Reference Tables or Equations
Release Duration (mins):	10
Wind Speed (m/sec):	1.5
Atmospheric Stability Class:	F
Topography:	Urban

Passive Mitigation Considered

Dikes:	
Enclosures:	
Berms:	
Drains:	
Sumps:	
Other Type:	Redundant SRVs with ventilation trunk, and alarms to activate active mitigation

Section 3. Toxics: Alternative Release

Toxic Alter ID: 1000108046

Percent Weight:	
Physical State:	Gas liquified by pressure
Model Used:	EPA's OCA Guidance Reference Tables or Equations
Wind Speed (m/sec):	3.0
Atmospheric Stability Class:	D
Topography:	Urban

Passive Mitigation Considered

Dikes:	
Enclosures:	
Berms:	
Drains:	
Sumps:	
Other Type:	Redundant SRVs with ventilation trunk, and alarms to activate active mitigation

Active Mitigation Considered

Sprinkler System:	
Deluge System:	
Water Curtain:	
Neutralization:	
Excess Flow Valve:	Yes
Flares:	
Scrubbers:	
Emergency Shutdown:	Yes
Other Type:	Layers of Protection Analysis, Failure analysis

Section 4. Flammables: Worst Case

No records found.

Section 5. Flammables: Alternative Release

No records found.

Section 6. Accident History

No records found.

Section 7. Program Level 3

Description

The facility is developing a new set of Metal Organic Chemical Vapor Deposition (MOCVD) Tools using Anhydrous Ammonia for the creation of semi-conductors to be used in the Light Emitting Diode (LED) industry. The facility uses ammonia, metals (i.e. aluminum, indium, gallium, etc.), and several other chemical ingredients. Ammonia is to be stored on site in a Versum BSGS system. The facility will receive anhydrous ammonia in ISO containers. The delivery truck unloads containers and connects it to the facility via flexible piping (i.e. pigtail) to the facility. Anhydrous ammonia vapor flows out of the BSGS system based on the pressure differential and valve actuation at the BSGS controller. The ammonia vapor travels via pigtail to the BSGS delivery controller, and then via the hard piped to the facility's MOCVD tools. The ammonia is then metered into the MOCVD tools as needed during experimentation phases by the use of a Mass Flow Controller (MFC) on each tool. It is important to note that everything inside the building is under control of qualified laboratory technicians and therefore are exempt from regulation under 40 CFR 68.115.

Program Level 3 Prevention Program Chemicals

Prevention Program Chemical ID:	1000135744
Chemical Name:	Ammonia (anhydrous)
Flammable/Toxic:	Toxic
CAS Number:	7664-41-7

Process ID:	1000125727
Description:	MOCVD Tool R&D
Prevention Program Level 3 ID:	1000108345
NAICS Code:	54171

Safety Information

Safety Review Date (The date on which the safety information was last reviewed or revised):	12-Oct-2021

Process Hazard Analysis (PHA)

PHA Completion Date (Date of last PHA or PHA update):	12-Oct-2021

The Technique Used

What If:	
Checklist:	
What If/Checklist:	
HAZOP:	Yes
Failure Mode and Effects Analysis:	
Fault Tree Analysis:	
Other Technique Used:	
PHA Change Completion Date (The expected or actual date of completion of all changes resulting from last PHA or PHA update):	12-Oct-2021

Major Hazards Identified

Toxic Release:	Yes
Fire:	Yes
Explosion:	Yes
Runaway Reaction:	
Polymerization:	
Overpressurization:	Yes
Corrosion:	Yes
Overfilling:	
Contamination:	Yes
Equipment Failure:	Yes
Loss of Cooling, Heating, Electricity, Instrument Air:	Yes
Earthquake:	
Floods (Flood Plain):	
Tornado:	Yes
Hurricanes:	Yes
Other Major Hazard Identified:	Human Factors

Process Controls in Use

Vents:	
Relief Valves:	Yes
Check Valves:	Yes
Scrubbers:	
Flares:	
Manual Shutoffs:	
Automatic Shutoffs:	Yes
Interlocks:	Yes
Alarms and Procedures:	Yes
Keyed Bypass:	
Emergency Air Supply:	
Emergency Power:	Yes
Backup Pump:	
Grounding Equipment:	Yes
Inhibitor Addition:	
Rupture Disks:	Yes
Excess Flow Device:	Yes
Quench System:	
Purge System:	
None:	
Other Process Control in Use:	Training, SRVs

Mitigation Systems in Use

Sprinkler System:	Yes
Dikes:	
Fire Walls:	
Blast Walls:	
Deluge System:	
Water Curtain:	
Enclosure:	
Neutralization:	
None:	
Other Mitigation System in Use:	

Monitoring/Detection Systems in Use

Process Area Detectors:	Yes
Perimeter Monitors:	
None:	
Other Monitoring/Detection System in Use:	At the BSGS ISO Container

Changes Since Last PHA Update

Reduction in Chemical Inventory:	
Increase in Chemical Inventory:	
Change Process Parameters:	
Installation of Process Controls:	
Installation of Process Detection Systems:	
Installation of Perimeter Monitoring Systems:	
Installation of Mitigation Systems:	
None Recommended:	
None:	
Other Changes Since Last PHA or PHA Update:	Moved location of ammonia storage on-site

Review of Operating Procedures

Operating Procedures Revision Date (The date of the most recent review or revision of operating procedures):	05-May-2021

Training

Training Revision Date (The date of the most recent review or revision of training programs):	05-May-2021

The Type of Training Provided

Classroom:	Yes
On the Job:	Yes
Other Training:	

The Type of Competency Testing Used

Written Tests:	Yes
Oral Tests:	
Demonstration:	Yes
Observation:	
Other Type of Competency Testing Used:	

Maintenance

Maintenance Procedures Revision Date (The date of the most recent review or revision of maintenance procedures):	31-May-2022
Equipment Inspection Date (The date of the most recent equipment inspection or test):	05-May-2021

Equipment Tested (Equipment most recently inspected or tested):	Anhydrous Ammonia Tank

Management of Change

Change Management Date (The date of the most recent change that triggered management of change procedures):	28-Feb-2017
Change Management Revision Date (The date of the most recent review or revision of management of change procedures):	05-May-2021

Pre-Startup Review

Pre-Startup Review Date (The date of the most recent pre-startup review):	23-Feb-2017

Compliance Audits

Compliance Audit Date (The date of the most recent compliance audit):	17-Jun-2022
Compliance Audit Change Completion Date (Expected or actual date of completion of all changes resulting from the compliance audit):	31-Dec-2022

Incident Investigation

Incident Investigation Date (The date of the most recent incident investigation (if any)):	
Incident Investigation Change Date (The expected or actual date of completion of all changes resulting from the investigation):	

Employee Participation Plans

Participation Plan Revision Date (The date of the most recent review or revision of employee participation plans):	05-May-2021

Hot Work Permit Procedures

Hot Work permit Review Date (The date of the most recent review or revision of hot work permit procedures):	05-May-2021

Contractor Safety Procedures

Contractor Safety Procedures Review Date (The date of the most recent review or revision of contractor safety procedures):	05-May-2021
Contractor Safety Performance Evaluation Date (The date of the most recent review or revision of contractor safety performance):	21-Jun-2022

Confidential Business Information

CBI Claimed:

Section 8. Program Level 2

No records found.

Section 9. Emergency Response

Written Emergency Response (ER) Plan

Community Plan (Is facility included in written community emergency response plan?):	Yes
Facility Plan (Does facility have its own written emergency response plan?):	Yes
Response Actions (Does ER plan include specific actions to be taken in response to accidental releases of regulated substance(s)?):	Yes
Public Information (Does ER plan include procedures for informing the public and local agencies responding to accidental release?):	Yes
Healthcare (Does facility's ER plan include information on emergency health care?):	Yes

Emergency Response Review

Review Date (Date of most recent review or update of facility's ER plan):	22-Jun-2022

Emergency Response Training

Training Date (Date of most recent review or update of facility's employees):	30-Sep-2021

Local Agency

Agency Name (Name of local agency with which the facility ER plan or response activities are coordinated):	LEPC Franklin Township
Agency Phone Number (Phone number of local agency with which the facility ER plan or response activities are coordinated):	(732) 873-5533

Subject to

OSHA Regulations at 29 CFR 1910.38:	Yes
OSHA Regulations at 29 CFR 1910.120:	Yes
Clean Water Regulations at 40 CFR 112:	
RCRA Regulations at CFR 264, 265, and 279.52:	
OPA 90 Regulations at 40 CFR 112, 33 CFR 154, 49 CFR 194, or 30 CFR 254:	
State EPCRA Rules or Laws:	Yes
Other (Specify):	

Executive Summary

A. Description of Stationary Source and Regulated Substances Handled

Veeco Instruments, Inc. - Somerset, New Jersey (Veeco) performs Research, Development, and Final Performance Testing of Metal Organic Chemical Vapor Deposition (MOCVD) tools manufactured at other Veeco facilities. The R&D operations take Metal organics such as and anhydrous ammonia to form metal nitrides (i.e. AlN, InN, GaN) on silicon and sapphire wafers.

As a result of the R&D operations, anhydrous ammonia is stored at the facility in quantities that exceed the threshold quantity specified by EPA regulations. Veeco has one covered process that requires compliance with Program 3 of the EPA Risk Management Program (RMP) regulation.
Anhydrous ammonia is delivered to the facility in ISO containers. The ISO Containers are connected to the Bulk Specialty Gas Delivery System (BSGS). The anhydrous ammonia is metered as needed into each of the facility's tools that are used in its R&D operations.

B. Accidental Release Prevention & Emergency Response Policies of Veeco

Veeco is committed to protecting facility personnel, the public and the environment from any workplace and accidental release hazards. Appropriate responses to releases of regulated chemicals are documented in the Hazard Communication Plan, and Emergency Action Plan.
Safety, environmental protection and risk management programs are implemented and coordinated with community emergency responders for emergency planning and response efforts.

C. Release Scenario Discussion

In accordance with the requirements of the EPA, RMP regulations Veeco performed the following offsite consequence analyses.
- One worst-case release scenario for anhydrous ammonia.
- One alternate-case release scenario for anhydrous ammonia.
Veeco used the EPA RMP*Comp Software and Offsite Consequence Analysis Guidance to calculate the estimated release rates and to determine the distance to the appropriate flammable endpoints.

D. Five-year Accident History

Under the EPA RMP regulations, an accident release is defined as a release of a regulated substance that "resulted in deaths, injuries, or significant property damage on-site, or known off-site deaths, injuries, evacuations, sheltering in place, property damage, or environmental damage." There were no accidental releases that occurred during the past 5 years.

E. Prevention Program Elements

Management System - Veeco has a management program in place that assigns overall responsibility for the development and implementation of the RMP Program to a qualified individual or position of responsibility. It clearly delineates accountability and responsibilities for any elements where responsibilities are delegated.

Process Safety Information - Up-to-date process safety information is maintained for use by employees operating the covered process in accordance with 40 CFR Part 68.65, including the following:
- SDS's for anhydrous ammonia, that contain toxicity information, permissible exposure limits, physical data, reactivity data, thermal and chemical stability data and synergistic effects from mixing process flows.
- Block flow diagrams for the covered process.
- Process chemistry and maximum intended Inventory data for the covered process.
- Safe operating limits and evaluation of consequences of deviations from these limits for the covered process.
- Covered process equipment information consisting of materials of construction; piping and instrumentation diagrams (P&IDs); electric classification; relief system design and design basis; ventilation system design; design codes and standards employed; and safety systems (interlocks, detection or suppression systems).

Process Hazard Analysis (PHA) - A PHA has been performed for the Program 3 covered process at Veeco in accordance with 40

CFR Part 68.67. The PHA was performed using the HAZOP method. The PHA identified the hazards associated with anhydrous ammonia and the covered process; causes of potential accidental release scenarios; safeguards used to prevent accidental releases; and methods used to detect, monitor or control accidental releases. Any issues identified during the PHA were documented and resolved in a timely manner. The PHA will be revalidated and updated once every five years following completion of the initial PHA.

Operating procedures - Detailed and up-to-date process operating procedures have been developed and are maintained for the anhydrous ammonia process in accordance with 40 CFR Part 68.69. Operating procedures provide clear instructions for safely conducting activities involving a covered process In a manner consistent with process safety information and are readily accessible to employees involved in a covered process. Operating procedures are reviewed annually to ensure that they remain current and accurate.
Operating procedures cover each operating phase of the covered process including initial system startup, normal operation, temporary operations, emergency shutdown and conditions that require; emergency operations, normal shutdown and start-up following a turnaround or emergency shutdown. Operating procedures also incorporate or reference relevant process safety information including the following:
- Process operating limits (including consequences of deviations and steps to correct or avoid such deviations)
- Safety and health considerations (including properties and hazards of covered chemicals, precautions necessary to prevent exposure, control measures to be taken upon physical contact or airborne exposure, quality control for raw materials, and control of regulated substance inventories).
- Safety systems and their functions.

Training - New employees working with a covered process receive initial training in accordance with 40 CFR Part 68.71. The training includes an overview of the process and process operating procedures, safe work practices, health and safety hazards, and emergency operations including shutdown.
Refresher training is provided at a minimum of once every three years to all employees working with the covered process. Documentation is maintained for each employee to ensure that he/she received and understood the required training.

Mechanical Integrity - A mechanical integrity program has been developed in accordance with 40 CFR Part 68.73 for covered process equipment. Employees involved in the maintenance of the covered process receive additional training, which includes an overview of the process, its hazards, and applicable procedures to ensure that the employee can perform the job in a safe manner. Written procedures have been developed to ensure that the covered process equipment is properly maintained, tested, and inspected at regular, scheduled intervals and that such activities are thoroughly documented. Maintenance, inspection and testing procedures and frequencies are consistent with applicable manufacturer's recommendations and follow accepted engineering practices. Any equipment deficiencies identified during maintenance, inspection or testing are corrected in a safe and timely manner.

Management Of Change (MOC) - A written MOC procedure has been implemented to manage changes in process chemicals, technology, equipment and operating procedures for the covered process in accordance with 40 CFR 68.75. The MOC procedures does not apply to "replacements in kind" which are defined as replacements that satisfy the original design specifications (e.g., replace a pressure reducing valve with a new identical valve supplied by the original equipment manufacturer). Prior to introducing a change, the MOC procedure is implemented to ensure the following:
- The technical basis for the change and its impact on health and safety have been fully evaluated;
- Affected operating procedures and applicable process safety information have been updated accordingly;
and - The schedule for implementing the change has been developed and required authorizations have been obtained.
- All employees involved in operating or maintaining the modified p rocess are informed of the change and trained accordingly prior to startup of the modified process.

Pre-Startup Safety Review (PSSR) - PSSRs are performed in accordance with 40 CFR part 68.77 for new covered processes and for modified covered processes when the modification is significant enough to require a change in the process safety information. The PSSR confirms the following prior to introducing a regulated substance into a process:
- Equipment and construction satisfy design specifications;
- Safety, operation, maintenance and emergency procedure have been developed and are adequate;
- A PHA has been performed for new covered processes, and all recommendations have been resolved or implemented prior to

startup;
- The MOC procedure has been completed for the process modifications; and
- Training for all employees involved in operating or maintaining the new or modified process has been performed.

Compliance Safety Audits - RMP Program compliance is confirmed through safety audits that are performed at least once every three years in accordance with 40 CFR Part 68.79. The audits are completed by at least one person knowledgeable in the process. A report of the findings is generated following the audit, and all deficiencies and/or recommendations are promptly addressed and the resolution is documented. The two most recent safety audit reports are maintained at the facility.

Incident Investigation - Specific incident investigation, reporting, and documentation procedures have been implemented and are followed in accordance with 40 CFR Part 68.81in response to any incident involving a covered process that did or could have reasonably resulted in a catastrophic release of a regulated substance. Under EPA RMP, a catastrophic release is defined as a major uncontrolled emission, fire, or explosions involving one or more regulated substances that present imminent and substantial endangerment to public health and the environment.
The incident investigation procedure is initiated as soon as possible and no later than 48 hours following an Incident. A team is established to perform the incident investigation and always includes at least one person knowledgeable in the process, a contract employee if the incident involves work by a contractor, and other persons with appropriate qualifications to investigate an accident. Following the investigation, a written report is prepared summarizing the following information at a minimum: date of the incident; date the investigation began; description of the incident and any contributing factors; and any recommendations resulting from the investigation. When completed, all affected personnel including contract employees review the report. Incident investigation reports are maintained at the facility for a minimum of five years.

Employee Participation - A written employee participation plan has been implemented that provides employees with access to PHA and all other information developed under the RMP regulation in accordance with 40 CFR Part 68.83. The employee participation plan describes employee participation in conducting PHA and in implementing all other RMP elements.

Hot Work Permit - An authorization and permit program for hot-work operations has been prepared and implemented for hot-work conducted on or near a covered process in accordance with 40 CFR Part 68.85. The permit is used to document that fire prevention and protection standards in 29 CFR 1910.252(a) have been implemented prior to beginning the hot-work operations. Also, the permit lists the date(s) authorized for hot-work and identifies the equipment to be worked on or near.

Contractors - A contractor safety program in accordance with 40 CFR Part 68.87 covers all contractors performing maintenance or repair, turnaround, major renovation, or specialty work on or adjacent to a covered process. The safety performance of each contractor is evaluated prior to selection. Each contractor employee is informed of the known potential fire, explosion hazard related to work on a covered process as well as the relevant provisions of the emergency response program. Procedures are in place to control the entrance, presence, and exit of contract employees in covered process areas. Periodically, the performance of the contract owner or operator is evaluated while working in or adjacent to a covered process.

F. Emergency Response Program

Veeco will only respond to incidental releases of anhydrous ammonia where the release can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel. For non-incidental releases Veeco will rely on outside responders. Therefore, Veeco has coordinated response actions with the local fire department and ensured that appropriate mechanisms are in place to notify emergency responders when there is a need for response.

G. Planned Changes to Improve Safety

Based on operational knowledge from other facilities, Veeco believes that the existing safety program is adequate. However, if any changes occur in the future which affect the anhydrous ammonia process, these changes will be thoroughly reviewed to ensure that the safety of Veeco employees and neighbors is not compromised.